Phenolic Impregnated Carbon Ablator (PICA) Gap Filler for Heat Shield Assemblies, Phase I

Completed Technology Project (2010 - 2010)

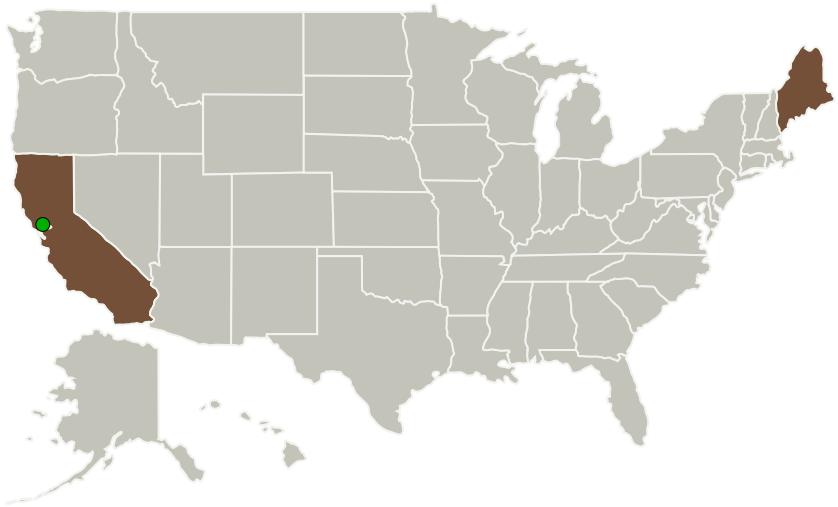
Project Introduction

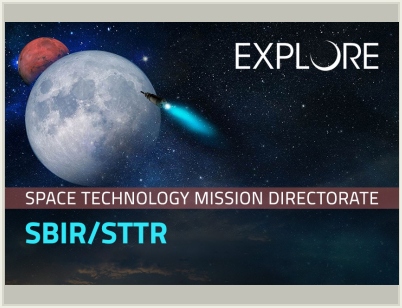
During this program Fiber Materials, Inc. (FMI

REG

) will develop practical methods for preparing Phenolic Impregnated Carbon Ablator (PICA) materials for joining thermal protection system (TPS) segments and penetrations of the heat shield assembly. Current and future mission flight environments and designs, such as those for Mars Science Laboratory Aeroshell (MSLA) and anticipated for New Frontiers and Mars EDL missions, will be assessed. Capability of developed solutions will address mechanical and thermal robustness, and surface recession under mission defined conditions. The Phase 1 program will evaluate joining and gap-fill materials, assess joining designs that can be cost effectively manufactured and assembled, define assembly methods and test joining material performance. The joining design and material approaches, test results, assembly methodology, and Phase 2 work plan will be delivered at the conclusion of the Phase I program. During the Phase 2 program, a mission scale PICA sub-assembly utilizing the developed joining system will be demonstrated, and representative assembly coupons will be tested under flight conditions. The proposed materials, designs and methods are TRL iÜ 3. It is anticipated that TRL iÝ 7 will be achieved at the conclusion of a successful Phase 1 and Phase 2 programs.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
Fiber Materials, Inc.	Lead Organization	Industry	Biddeford, Maine
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Maine

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140122)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Fiber Materials, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

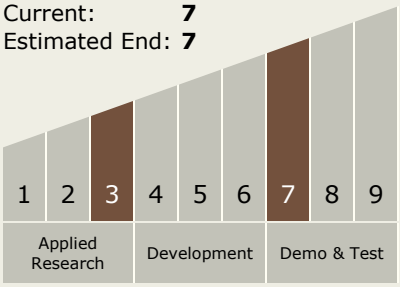
Carlos Torrez

Principal Investigator:

Steven Violette

Technology Maturity (TRL)

Start: **3**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.1 Aeroassist and Atmospheric Entry
    - TX09.1.1 Thermal Protection Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System